



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/568,167

05/10/2006

Heinrich Becker

3724.1007-000

5617

21005

7590

06/17/2009

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

530 VIRGINIA ROAD

P.O. BOX 9133

CONCORD, MA 01742-9133

EXAMINER

HEINCER, LIAM J

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

06/17/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/568,167	Applicant(s) BECKER ET AL.	
	Examiner Liam J. Heincer	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-44, 46-59 and 69-72 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-44, 46-59 and 69-72 is/are rejected.
- 7) ☒ Claim(s) 54 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 16, 2009 has been entered.

Claim Objections

Claim 54 is objected to because of the following informalities: Claim 54 does not contain a verb in the sentence. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

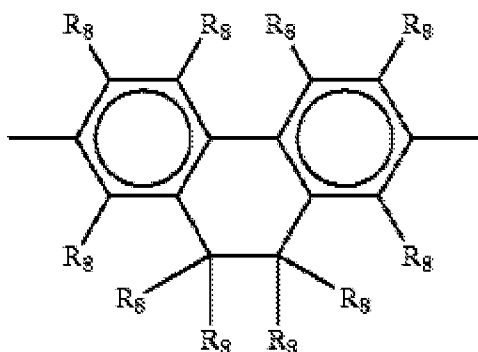
This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 37-44, 49-59 and 69-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi et al. (EP 1074600).

Considering Claims 37-39, 55: Noguchi et al. teaches a polymer containing at least 10 mol% of units (¶0020) of units of the formula



(¶0016) where R_1 and R_2 are hydrogen, an alkyl group having 1 to 20 carbon atoms, or an aryl group with 6 to 60 carbon atoms and n is zero or one (¶0016), and Ar_1 is



(7:30-35). Noguchi et al. teaches R_8 as being hydrogen, cyano groups, amino groups, silyl groups, alkyl or alkoxy groups with 1 to 20 carbon atoms, or an aryl or aryloxy group with 6 to 60 carbon atoms (¶0027).

Noguchi et al. does not teach with sufficient specificity the embodiment with R_8 being a non-hydrogen substituent in all four positions. However, Noguchi et al. teaches a non-hydrogen substituent as one of a finite number substituents at each position. As such, it would have been obvious to a person having ordinary skill in the art at the time of invention to have used the embodiment with four substituents in the polymer of Noguchi et al., and the motivation to do so would have been, it is obvious to choose any of a finite number of possible solutions when there is a reasonable expectation of success. "[A] person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely that product [was] not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under §

Art Unit: 1796

103.” *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1396 (2007). See MPEP § 2143.

Considering Claim 40: Noguchi et al. teaches the polymer as being conjugated (¶0016).

Considering Claims 41, 42, 49, and 50: Noguchi et al. teaches the polymer as additionally containing units that can be thiophene derivatives, pyrrole derivatives, carbazole derivatives, or furan derivatives (¶0033).

Considering Claims 43 and 44: Noguchi et al. teaches the polymer as additionally containing units that can be pyridine, pyrazine, anthracene, or quinoline derivatives (¶0033).

Considering Claims 51 and 52: Noguchi et al. teaches the polymer as additionally containing units that can be 1,4-phenylene, 1,4-naphthylene, 4,4'-biphenylene, or fluorene (¶0033).

Considering Claims 53 and 54: Noguchi et al. teaches the substituents as being alkyl groups with 1 to 20 carbon atoms (¶0016).

Considering Claim 56: Noguchi et al. teaches the phenanthracene units as having alkoxy substituents with 1 to 20 carbons along with alkyl substituents with 1 to 20 carbon atoms/formulae LXXIX and LXXXI (¶0027).

Considering Claim 57: Noguchi et al. teaches the phenanthracene units as being present in at least 41 mol% (¶0018).

Considering Claim 58: Noguchi et al. teaches the polymer as being used in a mixture (¶0061).

Considering Claim 59: Noguchi et al. teaches a solution comprising the polymer and a solvent (¶0058).

Considering Claim 69-72: Noguchi et al. teaches the polymer as being used in a polymer LED (¶0061).

Claims 46-48 rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi et al. as applied to claim 37 above, and further in view of Baldo et al. (Appl. Phys. Lett., 75(1), 1999).

Art Unit: 1796

Considering Claims 46-48: Noguchi et al. teaches the polymer of claim 37 as shown above.

Noguchi et al. does not teach units that provide electrophosphorescence to the polymer. However, Baldo et al. teaches using a tris(2-phenylpyridine) iridium unit in a organic LED (pg. 4). Noguchi et al. and Baldo et al. are combinable as they are concerned with the same field of endeavor, namely organic LEDs. It would have been obvious to a person having ordinary skill in the art at the time of invention to have used the iridium unit of Baldo et al. in the polymer of Noguchi et al., and the motivation to do so would have been, as Baldo et al. suggests, phosphorescent units provide high quantum and power efficiencies (pg. 4).

Response to Arguments

Applicant's arguments with respect to claims 37-44, 46-59 and 69-72 with regard to anticipation have been considered, and are persuasive, but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed March 16, 2009 with regard to obviousness have been fully considered but they are not persuasive, because:

A) Applicant's argument that Noguchi et al. shows preference for disubstituted embodiments is not persuasive. The applicant is correct in their assessment that Noguchi et al. shows preference for disubstituted embodiments (chemical formulae 8 and Example 8). However, a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989). Additionally, disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). See MPEP § 2123. The presence of preferred embodiments with only monosubstitution at the 9 and 10 positions is not sufficient to constitute a teaching away from the claimed invention.

Art Unit: 1796

B) In response to applicant's argument that the substituents increase the solubility of the polymer, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Additionally, Noguchi et al. teaches that the substituents on the repeat units increase the solubility of the polymer in solution (¶0034).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Liam J. Heincer whose telephone number is 571-270-3297. The examiner can normally be reached on Monday thru Friday 7:30 to 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/

Supervisory Patent Examiner, Art Unit 1796

LJH

May 26, 2009